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Obsessive compulsive disorder due to dexamethasone use

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ABSTRACT

Obsessive-compulsive disorder (OCD) has a prevalence of approximately 2% and in rare instances, can be induced by medications. Previously, lamotrigine, clozapine and olanzapine have been associated with inducing obsessive-compulsive symptoms. Corticosteroids can also cause various psychiatric side effects, although obsessive-compulsive symptoms are rarely observed as an adverse effect. To date, there has been scant literature available on dexamethasone-induced obsessive-compulsive disorder. The recommended treatment in cases of dexamethasone-induced obsessive compulsive and related disorders is corticosteroid discontinuation. In previous case reports, Selective Serotonin *Re*-uptake Inhibitors (SSRI) medications have been used as an adjunct therapy, especially if the patient requires continuous corticosteroid therapy to maintain medical stability. Due to the rarity of dexamethasone-induced OCD and the inherent limitations of a case report, there would be benefit from future research to further investigate these findings. In our patient, he had previously taken two subsequent 6-day courses of dexamethasone 4 mg daily, in the context of dental surgery complications with no prior symptoms of OCD experienced. Three days after the last dose of dexamethasone, he started a third course of dexamethasone 4 mg daily and developed obsessive thoughts about dying on the same day. He recovered spontaneously after 5 days of steroid discontinuation with no return of psychiatric symptoms at outpatient follow up 11 days later. This is the first case report of spontaneously resolved dexamethasone-induced OCD from low dose steroids in an adult patient without any prior psychiatric history or structural brain pathology.

Introduction

Obsessive compulsive disorder (OCD) is diagnosed by the presence of obsessions (unwanted, repetitive thoughts causing distress) and/or compulsions (repetitive physical or mental acts meant to reduce the distress experienced by the obsessions). The lifetime prevalence of OCD is 1.6–2.3% and the specific pathophysiology responsible for OCD remains unclear (Brock and Hany, 2023). However, current theories include neurotransmitter imbalance, sequelae of structural brain injury, and medication use. In previous literature, substance/medication-induced obsessive-compulsive symptoms have been documented from high dose corticosteroids (Grabe et al., 1998; Scheschonka et al., 2002), anti-psychotics (Fonseka et al., 2014), mood stabilizer medications (Sharma and Doobay, 2019) and stimulants (Jhanda et al., 2016). In patients with schizophrenia, clozapine and olanzapine was found to induce de-novo obsessive-compulsive symptoms in 20–28% and 11–20% of patients respectively (Fonseka et al., 2014). Lamotrigine was also noted to induce obsessive-compulsive symptoms in a case series of 8 patients with bipolar disorder (Sharma and Doobay, 2019). However, there is no amalgamated prevalence rate of medication-induced OCD in the literature.

Corticosteroid-related psychiatric adverse effects have been well documented in the literature, with incidence ranging from 1.8% - 57% of patients including, but not limited to, symptoms of agitation, anxiety, depression, irritability, insomnia, mania, and psychosis (Warrington and Bostwick, 2006). Dosage has been reported as the most important risk factor for developing psychiatric side effects from corticosteroid use. However, dose was not found to be associated with the time of onset, severity, duration of psychiatric side effects. Female sex was reported to have a minimal, although statistically insignificant increased risk of developing corticosteroid-induced psychiatric adverse effects. Previous psychiatric history, age, previous corticosteroid-induced psychiatric disturbances, and previous treatments free of such disturbances were not predictive of future responses to treatment (Warrington and Bostwick, 2006). At present, there are limited clues available to clinicians to assess patient risk of future psychiatric disturbances from corticosteroid use. Induction of obsessive-compulsive symptoms due to corticosteroid treatment is rarely reported in the literature, but may be a serious side effect of the medication. In this case report, we discuss an unusual presentation of obsessive compulsive disorder due to low-dose dexamethasone use, as well as explore treatment recommendations.

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Day 0	Final dental graft
Day 3	Start course #1 of dexamethasone 4mg daily and amoxicillin 250mg daily
Day 9	Dexamethasone course #1 complete
Day 13	Amoxicillin course #1 complete
Day 15	Start course #2 of dexamethasone 4mg daily and amoxicillin 250mg daily
Day 21	Dexamethasone course #2 complete
Day 23	Start course #3 of dexamethasone 4mg daily Onset of OCD symptoms ED visit #1 Discontinued course #3 of dexamethasone after one dose was taken
Day 24	Worsening OCD symptoms Suicidal ideation onset ED visit #2
Day 25	Amoxicillin course #2 complete
Day 26	ED visit #3 OCD symptoms progressing Suicidal ideation escalating with expressed intent and plan Admitted to acute inpatient psychiatry unit for safety monitoring
Day 27	Full resolution of psychiatric symptoms with no therapeutic interventions
Day 30	Discharged from hospital after 3 day period of stability in mental status
Day 41	No return of psychiatric symptoms at outpatient follow-up appointment

Fig. 1. Timeline of amoxicillin and dexamethasone courses in relation to onset and resolution of psychiatric symptoms.

Case presentation

A 64-year-old married male with a Bachelor's degree and no prior psychiatric history, presented to the Emergency Department (ED) for acute suicidal ideation. His-past medical history included hypertension and hyperlipidemia for which he took irbesartan and atorvastatin, respectively. This patient had undergone a series of elective dental procedures in the preceding 10 months, with the last gingival graft performed 4 weeks prior to his presentation, which were complicated by poor healing and infection. For this, he completed two 10-day courses of 250 mg amoxicillin daily and two 6-day courses of low dose dexamethasone at 4 mg daily. However, repeat stitches were required for dehiscence and a third course of dexamethasone was ultimately started 3 days after completing the previous round of dexamethasone.

1 hour after taking the first dose of the 3rd dexamethasone course, he started experiencing intrusive thoughts about dying due to post-operative pain inhibiting his oral intake. He presented to the ED on the same day, where he was informed that this was likely steroid-induced. He was discharged home and discontinued dexamethasone. Despite discontinuation, he continued to have increasingly intrusive, ego-dystonic suicidal thoughts. This prompted a second presentation to the emergency department 24 h later due to suicidal ideation with plan of cutting, statements of "I'm going to die", and thoughts that his "system is shutting down". These thoughts were described as repetitive, intrusive and ego dystonic, causing extreme distress. He was discharged home from this hospital presentation as the ED physician stated this was likely the result of the steroid which was recently discontinued.

He continued to have escalating obsessions about dying, especially as he noticed new onset flatulence and palmar erythema, which he interpreted as further signs of imminent death. There were no clear compulsive behaviors. He then re-presented to the ED for a third time in 4 days due to increasing intent to complete suicide by cutting. He was brought to hospital by his family after he shared passwords and legal documents with his son in preparation for his death. Initial medical workup included routine bloodwork, ethanol level, urinalysis, and head CT, all of which were noncontributory. On presentation, he had increased irritability and slightly lower mood in the week preceding due to stress surrounding the infection, although he did not meet the diagnostic criteria for a mood or anxiety disorder. There were no frank manic or psychotic symptoms seen, and he did not present as disorganized. Furthermore, there were no body image concerns endorsed by the patient. Differential diagnosis included OCD vs medication induced obsessive compulsive and related disorder. He was admitted to the inpatient psychiatry unit under a Form 1 of the Ontario Mental Health Act due to concerns for danger to self. On post-admission day 1, his suicidal ideations and intrusive thoughts had spontaneously fully resolved. He was discharged home 2 days later with no re-occurrence of intrusive thoughts. He received no medication during hospital admission or post-discharge. At psychiatric outpatient follow-up 11 days later, he had no return of symptoms. The patient's clinical course (Fig. 1) suggested a Naranjo score of 6, reflecting a probable drug reaction (Naranjo et al., 1981).

Discussion

Given the patient's negative medical workup and lack of concurrent mood, anxiety, and psychotic disorder diagnoses, our patient was felt to have medication-induced obsessive compulsive and related disorder. This was reflected through his ego-dystonic obsessions about death, abrupt symptom onset after starting dexamethasone, and spontaneous recovery after stopping the medication, at the tail end of the elimination half life of dexamethasone (36–54 h (Melby, 1974)). Systemic corticosteroid therapy is known to cause psychiatric side effects, with up to 6% of patients experiencing severe psychiatric disturbances such as psychosis and suicidal ideation (Warrington and Bostwick, 2006). Both dosage (Warrington and Bostwick, 2006; Lewis and Smith, 1983; Tango, 2022) and polypharmacy (Tango, 2022) are suggested to be prominent risk factors for steroid-induced psychiatric disturbances. In our case, our patient was taking a low dose of dexamethasone.

Furthermore, his other medications irbesartan and atorvastatin are not independently associated with psychiatric side effects, nor do their interactions with dexamethasone or amoxicillin account for his atypical presentation (Reference ID 2023; Reference ID 2023).

While it is possible that this patient's concurrent amoxicillin use may have contributed to this presentation, he had previously taken amoxicillin within the last year, without any adverse effects. Additionally, his psychiatric symptoms resolved much later than the elimination half-life of amoxicillin, which is approximately 1 hour (Amoxicillin, 1979). The onset of obsessive symptoms within 6 weeks of corticosteroid initiation is similar to the onset of other psychiatric adverse effects from corticosteroids. Lewis and Smith note that although 39% of patients will have adverse effects within a week of medication initiation, 89% developed psychiatric side effects within 6 weeks of treatment initiation (Lewis and Smith, 1983). However, it is possible for psychiatric side effects to develop from corticosteroid use beyond the 6-week mark. This highlights the importance of continued monitoring for psychiatric side effects of corticosteroid treatment. Furthermore, the lack of psychiatric side effects from previous corticosteroid treatment is a poor predictor of adverse responses to future corticosteroid courses (Lewis and Smith, 1983), which was also observed in our patient. This study details the case of an individual patient experiencing OCD induced by dexamethasone and summarizes key points from similar case reports. These findings should be interpreted with caution. Also in our patient, a Yale-Brown Obsessive-Compulsive Scale Symptom score was not calculated at the time of presentation.

Currently, there is scarce literature describing dexamethasone-induced obsessive compulsive and related disorders. The first documented case of dexamethasone-induced OCD was published in 1983 after the administration of dexamethasone for cerebral edema in the context of brain cancer (Bick, 1983). Grabe and colleagues also reported a case of pre-existing obsessive-compulsive symptoms which were exacerbated by prednisolone therapy at 100 mg daily (Grabe et al., 1998). In 2002, a third report was published detailing new-onset obsessive-compulsive symptoms following 1 month of high-dose corticosteroid treatment for pulmonary fibrosis (Scheschonka et al., 2002). Another recent case report details acute-onset of ego-dystonic, intrusive thoughts following the initiation of dexamethasone 0.5 mg BID and cyproheptadine 8 mg daily (Khanam et al., 2021). In all cases, obsessive-compulsive symptom onset followed corticosteroid initiation, and fully resolved following complete cessation of the offending medication(s). Current literature recommends complete cessation of corticosteroid, which was how our patient was managed (Warrington and Bostwick, 2006). However, in patients who cannot discontinue the corticosteroid due to other medical comorbidities, a dose reduction of 7.5 mg prednisone equivalents per day tapered down to a daily maximum of 40 mg prednisone equivalents per day is recommended for those with psychiatric side effects secondary to prednisone treatment (Warrington and Bostwick, 2006). Specific to corticosteroid-induced OCD, fluvoxamine and fluoxetine are the only treatments documented in former case reports. Previous anecdotal evidence showed full resolution of obsessive-compulsive symptoms with fluoxetine therapy (Khanam et al., 2021), and fluvoxamine was shown to be effective in resolving obsessive-compulsive symptoms even when corticosteroids were continued (Oulis et al., 2009).

Conclusion

Here we present a unique case of low-dose dexamethasone-induced obsessive-compulsive and related disorder with sudden onset after taking the first dose of a third course of dexamethasone treatment, and abrupt resolution of symptoms 5 days after stopping the medication. Our patient was not started on regular or as needed mood stabilizers or anti-psychotic medication as he did not show overt signs of mania or psychosis in the acute inpatient setting. In cases of OCD induced by dexamethasone, the recommended treatment from currently available literature includes steroid cessation, with a gradual taper if taking a high dose. If corticosteroids cannot be discontinued, the initiation of fluvoxamine or fluoxetine can be considered. This is the first case report of dexamethasone-induced obsessive compulsive related disorder from low dose steroids in an adult patient without any prior psychiatric history or structural brain pathology.

Consent

Informed consent was provided by the patient to publish this work.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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